REMARKS

Claims 49-76 and 124-208 are pending in the above-captioned patent application after this amendment. Figures 1B, 2 and 19 have been objected to for certain informalities. Claims 1-143 have been rejected.

The Applicant respectfully disagrees with the rejection of claims 1-143. However, the Applicant has amended Figures 1B and 2, the specification and claims 70 and 72, cancelled claims 1-48 and 77-123 without prejudice, and added new claims 144-208 for the purpose of expediting the patent application process in a manner consistent with the goals of the Patent Office pursuant to 65 Fed. Reg. 54603 (September 8, 2000), and/or to clarify what the Applicant regards as the present invention. Figure 1B has been amended to correct certain informalities and not to overcome the stated objection. The specification has been amended to overcome a certain informality.

Support for the amendments to claims 70 and 72 can be found throughout the originally filed specification. In particular, support for the amendments to claims 70 and 72 can be found in the specification at page 28, line 13 through page 30, line 17, and in Figures 1B, 11A, 11B, 12A and 12B.

Support for new claims 144-208 can be found throughout the originally filed specification. In particular, support for new claims 144-208 can be found in the specification at page 7, lines 23-24, at page 8, line 1 through page 9, line 13, at page 12, line 24 through page 13, line 29, at page 21, line 14 through page 22, line 12, at page 27, line 30 through page 28, line 9, in Figures 1B and 5A-5I, and in the originally filed claims.

No new matter is believed to have been added by this amendment.

Reconsideration of the pending application is respectfully requested in view of the above-recited amendments and the arguments set forth below.

Objection to the Drawings

The Patent Office has objected to the drawings on the basis of certain technicalities or informalities. The Applicant has amended Figures 1B and 2 with this amendment. Figure 1B has been amended to add numerals "150" and "152" that are recited in the specification on page 20, lines 20-22, and not to overcome the stated objection. A red-lined drawing and a corrected drawing of Figure 1B are submitted herewith.

Additionally, the Patent Office has objected to Figure 1B and Figure 19 because in Figure 1B, numerals "1900" and "1902" are missing, and because Figure 19, as drawn, has no, or unclear relationship to Figure 1B. The Applicant respectfully disagrees with the Patent Office and respectfully traverses the objection to Figure 1B and Figure 19. The specification on page 6, lines 5-20, is clearly describing Figure 1A and not Figure 1B, so any objection to Figure 1B for this reason is improper. Further, if the objection is directed toward Figure 1A, the objection is also improper because the specification clearly recites that elements 1900 (an exposure apparatus) and 1902 (a wafer) are illustrated in Figure 19. Still further, the Applicant respectfully submits that the relationship between Figure 1A and Figure 19 is clear in that Figure 1A illustrates an inspection system 100 for inspecting a mask 101 that is employed with the exposure apparatus 1900 illustrated in Figure 19. In fact, the mask 101 itself is clearly illustrated

in both Figure 1A and Figure 19. Therefore, the objections to Figure 1A and Figure 19 are improper and should be withdrawn.

Moreover, the Patent Office has objected to Figure 2 because numeral "126", recited in the specification on page 9, line 21 is missing. Attorney for the Applicant acknowledges the aforementioned informality. A red-lined drawing and a corrected drawing of Figure 2 are submitted herewith.

Rejections Under 35 U.S.C. §112, Second Paragraph

Claims 8, 10, 39, 41, 70, 72, 84, 86, 114 and 116 are rejected under 35 U.S.C. §112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. More specifically, the Patent Office states that the omitted structural cooperative relationships are manifested in the claim recitation "magnitude of the signal of the beamlet at the mask", as it is unclear how a signal can possibly be measured at the mask.

In response, the Applicant has cancelled claims 8, 10, 39, 41 84, 86, 114 and 116 without prejudice. Therefore, the rejection of claims 8, 10, 39, 41 84, 86, 114 and 116 under 35 U.S.C. §112, second paragraph is moot. Further, the Applicant has amended claims 70 and 72 to provide that "the magnitude of the signal of the beamlets that is directed toward the mask is compared with the magnitude of the signal measured by the detector assembly to inspect the mask." The Applicant respectfully submits that the structural cooperative relationships are now clearly shown in amended claims 70

and 72. Therefore, amended claims 70 and 72 are believed to be patentable over 35 U.S.C. §112, second paragraph.

Rejections Under 35 U.S.C. §§102(a), 102(e)

Claims 1, 6-15, 19, 22-30, 34, 38-42, 45-48, 77, 82, 83, 87-91, 95, 98-106, 113, 117 and 120-123 are rejected under 35 U.S.C. §§102(a), 102(e) as being anticipated by U.S. Patent No. 5,892,224 issued to Nakasuji ("Nakasuji"). The Applicant has cancelled claims 1, 6-15, 19, 22-30, 34, 38-42, 45-48, 77, 82, 83, 87-91, 95, 98-106, 113, 117 and 120-123 without prejudice with this amendment. Accordingly, the rejection of claims 1, 6-15, 19, 22-30, 34, 38-42, 45-48, 77, 82, 83, 87-91, 95, 98-106, 113, 117 and 120-123 under 35 U.S.C. §§102(a), 102(e) is moot.

Rejections Under 35 U.S.C. §§103(a)

Claims 2-5, 16-18, 31-33, 35-37, 78-81, 92-94 and 107-112

Claims 2-5, 16-18, 31-33, 35-37, 78-81, 92-94 and 107-112 are rejected under 35 U.S.C. §103(a) as being unpatentable over Nakasuji. The Applicant has cancelled claims 2-5, 16-18, 31-33, 35-37, 78-81, 92-94 and 107-112 without prejudice by this amendment. Accordingly, the rejection of claims 2-5, 16-18, 31-33, 35-37, 78-81, 92-94 and 107-112 under 35 U.S.C. §103(a) is moot.

Claims 8-10, 39-41, 84-86 and 114-116

Claims 8-10, 39-41, 84-86 and 114-116 are rejected under 35 U.S.C. §103(a) as being unpatentable over Nakasuji in view of U.S. Patent No. 5,929,454 issued to Muraki et al. ("Muraki et al."). The Applicant has cancelled claims 8-10, 39-41, 84-86 and 114-116 without prejudice by this amendment. Accordingly, the rejection of claims 8-10, 39-41, 84-86 and 114-116 under 35 U.S.C. §103(a) is moot.

Claims 20, 43, 44, 49-76, 96, 97, 118, 119 and 124-143

Claims 20, 43, 44, 49-76, 96, 97, 118, 119 and 124-143 are rejected under 35 U.S.C. §103(a) as being unpatentable over Nakasuji in view of U.S. Patent No. 6,462,346 issued to Kobinata ("Kobinata") and Muraki et al., and further in view of U.S. Patent No. 5,438,207 issued to Itoh et al. ("Itoh et al."), or U.S. Patent No. 4,524,277 issued to Shimura et al. ("Shimura et al."), or Japanese Patent No. JP-405090140A issued to Yasaka et al. ("Yasaka et al."). The Applicant has cancelled claims 20, 43, 44, 96, 97, 118 and 119 without prejudice by this amendment. Accordingly, the rejection of claims 20, 43, 44, 96, 97, 118 and 119 under 35 U.S.C. §103(a) is moot. The Applicant respectfully traverses the rejection of claims 49-76 and 124-143 and submits that claims 49-76 and 124-143 are patentable over the cited combination of references.

The Patent Office provides that Nakasuji discloses an inspection system for inspecting a mask 75, the mask 75 including at least one actual transparent area 75b and at least one actual opaque area 75a, the inspection system comprising: a beamlet supply assembly 71 that directs a shaped beamlet(s) EB (or EB^n) towards one of the actual areas of the mask 75, the shaped beamlet(s) EB having a beamlet characteristic

that corresponds to a desired characteristic of one of the desired areas comprised in the mask 75. The Patent Office further provides that Nakasuji discloses a beamlet supply assembly 71 that directs a plurality of spaced apart, shaped beamlets EB^n simultaneously toward the mask 75. Additionally, the Patent Office provides that Nakasuji discloses that the beamlet supply assembly 71 includes a beamlet shaper 71a that shapes the beamlets EB^n. Still further, the Patent Office provides that Nakasuji discloses a detection apparatus and method making use of a detector assembly 81, 83 that measures the magnitude of the signal that passes through at least a portion of the mask 75.

Yet further, the Patent Office provides that Nakasuji discloses shaped beamlets that have substantially the same shape as one of the desired areas, and that it would have been obvious to one of ordinary skill in the art at the time the invention was made to also give the beamlets the same cross-sectional size, since that would make the determination of mask defect more quantitative, and hence, more reliable. The Patent Office also provides that it would have been obvious to one of ordinary skill in the art at the time the invention was made to also give the beamlets the same pattern, in the alternative or in combination, since these would make the determination of mask defect be more quantitative and accurate.

The Applicant provides that Nakasuji is directed to apparatus and methods for detecting defects in a pattern defined by a mask, reticle, wafer, or other "sample." The defect detecting apparatus includes an electron source that directs an electron beam EB toward an aperture plate 71 defining multiple apertures 71a to create multiple parallel electron beams EB^n. The electron beams EB^n then pass through a first

condenser lens 72 and a second condenser lens 73 and a deflector 74 before encountering a sample 75 to be tested. The sample 75 comprises multiple subfields 78 each having one image that will be scanned by one of the electron beams EB^n.

As noted with one of the Nakasuji embodiments, the dimension of each beam as focused on the sample is a 0.1 μm by 0.1 μm square at a pitch of 100 μm. The defect detecting apparatus is adapted to scannably irradiate multiple charged particle beams simultaneously on respective measurement points ("loci") in an irradiation region on the surface of the sample. After each region is scanned, the sample moves in either the x-direction or the y-direction and is scanned again in like manner. The apparatus further includes a detector that can be situated so as to detect charged particles passing through the irradiated region of the sample, or the detector can be situated so as to detect reflected electrons propagating from the loci in the irradiated region as a result of the electron beams impinging on the loci. (Nakasuji column 2, lines 1-24, column 10, lines 42-64, column 20, line 66 through column 21, line 36, and in Figures 1, 2(b) and 11).

However, Nakasuji is not directed to an inspection system wherein the beamlet supply assembly selectively and alternatively adjusts the shaped beamlet to have a cross-sectional shape of at least a triangle and a rectangle that have a cross-sectional shape of at least either a triangle or a rectangle. Further, Nakasuji does not disclose a first multi-aperture array having a first shape, wherein a first portion of the first shape is substantially hexagon shaped. Yet further, Nakasuji is not directed to an inspection system including at least one deflector to deflect the beamlets to fill in the spaces between adjacent beamlets. Still further, Nakasuji is not directed to an inspection

system including a control system to control and adjust a first multi-aperture array and a second multi-aperture array so the shape of the electron beams can be easily changed between a first shape and a second shape that is different from the first shape.

Additionally, Nakasuji provides no incentive for using different shapes for the spaced apart beamlets, or for giving the beamlets the same cross-sectional size or the same pattern as one of the desired areas. Nakasuji uses a simple shape, typically a 0.1μm by 0.1μm square, for the beamlets because each beamlet is designed to scan or trace the perimeter of one of the desired areas. Nakasuji is not designed to successively, stepwise, match adjacent desired areas arranged in a desired pattern as is the present invention. Therefore, the use of variable shaped beamlets that have the same cross-sectional shape or pattern of one of the desired areas will not make the inspection assembly of Nakasuji any more or less effective at tracing the perimeter of one of the desired areas.

The Patent Office provides that Muraki et al. discloses an electron beam exposure system and method making use of a magnitude of signal reflected off an object 5 (the object 5 is substituted by Nakasuji's mask) in which the reflected signal detected by electron detector 9 is compared to that measured by detector 10. The Patent Office provides that it would have been obvious to one of ordinary skill in the art at the time the invention was made to measure electrons reflected off from Nakasuji's mask, as taught by Muraki et al., in addition to those measured by Nakasuji's detector assembly 81, 83, since a comparison of the two signals would enhance the accuracy of detecting a mask defect.

The Patent Office provides that Kobinata discloses a mask inspection device and method that make use of a blanking aperture 15 disposed between the mask M and the electron source 11. Additionally, the Patent Office provides that Kobinata discloses an electron gun as an electron source, and electron guns, as known in the art, can be used to generate a multiple array of beamlets if appropriate electron optics and apertures are used. The Patent Office further provides that the electron source would be modified by Nakasuji's beamlet shaping section 71. The Patent Office further provides that Muraki et al. also discloses the use of a blanking aperture BA disposed between the beamlet shaping section 3 and the mask 5. The Patent Office provides that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Nakasuji's mask inspecting apparatus by adding a blanking aperture as taught by Kobinata or Muraki et al. since such a blanking aperture would enable one of ordinary skill in the art to compose a variable shape electron beam of any desired form based on a superposition of differently shaped electron beams in timely sequential order, here accomplished by blanking the electron beam during every change of shape.

The Applicant provides that Muraki et al. is directed to an electron beam exposure apparatus and position detection apparatus including an electron gun 1 that generates electron beams that are converted into nearly collimated electron beams by a condenser lens 2. The electron beams then enter an element electron optical system array 3 that includes a blanking electrode, an aperture and an electron lens to form a plurality of intermediate images of the source. The images then pass through a reduction electron optical system 4 that includes a first magnetic doublet having a first projection lens 41 and a second projection lens 42, a blanking aperture BA having a

single aperture, a dynamic stigmatic coil 8, a deflector 6, a dynamic focusing coil 7, and a second magnetic doublet having a first projection lens 43 and a second projection lens 44, thus forming source images on a wafer. Muraki et al. is further directed to a reflected electron detector 9 for detecting reflected electrons when the electron beams are irradiated onto alignment marks formed on the wafer 5 or marks on a stage reference plate 13 to ensure that the wafer is properly aligned, and a Faraday cup 10 for detecting the charge amount of the source image formed by the electron beam. (Muraki et al. column 6, line 59 through column 8, line 6, and in Figure 1).

The Applicant provides that Kobinata is directed to a mask inspecting apparatus 2 that inspects a defect of a scattering mask. The mask inspecting apparatus 2 includes an electron gun 11 for emitting an electron beam, electron lenses 13, 14 to converge the electron beams EB, a blanking aperture 15 that converts a flux of electron beams into a necessary shape, and electron lenses 17, 18 to project and transcript the electron beams EB scattering by the scattering mask M to the wafer W. (Kobinata column 5, lines 15-31, and in Figures 2 and 3).

However, neither Muraki et al. nor Kobinata is directed to the use of blanking apertures to create electron beams that have a cross-sectional shape of at least either a triangle or a rectangle. Further, Nakasuji does not provide incentive to modify its structure to include blanking apertures as taught by Muraki et al. or Kobinata to shape the spaced apart beamlets. Nakasuji provides no incentive for using different shapes for the spaced apart beamlets. Nakasuji uses a simple shape, typically a 0.1μm by 0.1μm square, for the beamlets because each beamlet is designed to scan or trace the perimeter of one of the desired areas. Nakasuji is not designed to successively,

stepwise, match adjacent desired areas arranged in a desired pattern as is the present invention. Therefore, the use of variable shaped beamlets will not make the inspection assembly of Nakasuji any more or less effective at tracing the perimeter of one of the desired areas.

The Patent Office provides that Itoh et al. in numerals 112, 116, Shimura et al. in apertures 6, 10, or Yasaka et al. in apertures P1, P2 disclose the use of at least two multi-aperture arrays. The Patent Office further provides that it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Nakasuji's one aperture array with two multi-aperture arrays, in order to generate an electron beam of variable shapes determined by the intersection of the two apertures as taught by Itoh et al., Shimura et al., or Yasaka et al.

The Applicant provides that Itoh et al. is directed to an electron beam direct writing system including an electron gun 11 for supplying an electron beam 13, a first aperture member 12 having a single aperture, a deflector 14 to give a controllable size to the mapping pattern, an objective 17 for focusing the electron beam 13 on a surface of a semiconductor substrate 18, and a second aperture member 16 having an evaluation aperture 15. The first aperture member 12 and the second aperture member 16 are arranged between the electron gun 11 and the substrate 18 so as to define a mapping pattern variable in form, the second aperture member 16 including the evaluation aperture 15 which serves for mapping an evaluation pattern 92a to 92i in each shot pattern 91. (Itoh et al. column 1, line 56 through column 2, line 2, column 5, line 33 through column 6, line 4, and in Figures 1 and 2).

Itoh et al. also includes a discussion of prior art as cited by the Patent Office, which discloses similar features. The prior art is directed to an electron beam direct writing system including an electron gun 111 for projecting an electron beam 113 toward a first aperture member 112 having a single aperture. The electron beam 113 is then passed through a deflector 114 to serve as a shaping lens for producing a controlled rectangular pattern before passing through a second aperture member 116. The first aperture member 112 and the second aperture member are vertically spaced apart and arranged for cooperation to give the electron beam 113 a desired rectangular form. The system further includes an objective 117 for having the electron beam 113, as it has passed through the second aperture member 116, focused to form a corresponding image at an exposed location on the surface of a semiconductor substrate 118. (Itoh et al. column 1, line 56 through column 2, line 2, and in Figure 1).

However, Itoh et al. does not disclose the use of at least two multi-aperture arrays to shape the electron beam passing through them. Additionally, Itoh et al. is not directed to the use of multiple apertures to create electron beams that have a cross-sectional shape of at least either a triangle or a rectangle. Further, Itoh et al. does not disclose a first aperture having a first portion that is substantially hexagon shaped.

The Applicant further provides that Shimura et al. is directed to an electron beam focusing system of an electron beam pattern writing apparatus. An electron beam 2 produced by an electron gun 1 is focused by an electron lens 4 and modified by a deflecting coil 5a before passing through a first single aperture member 6. The electron beam is then collimated by an electron lens 7 and subsequently modified in respect of traveling direction by deflecting plates 8, before converging upon passing through an

electron lens 9 to be focused onto a second single aperture member 10, whereby the marginal portion of the beam is again cut off. Both apertures 6, 10 have a single aperture and are of a rectangular or square form, and are displaced relative to each other so that the electron beam 2 passing through both apertures 6, 10 is correspondingly shaped. (Shimura et al. column 2, lines 45-67, and in Figure 1).

However, Shimura et al. does not disclose the use of at least two multi-aperture arrays to shape the electron beam passing through them. Additionally, Shimura et al. is not directed to the use of multiple apertures to create electron beams that have a cross-sectional shape of at least either a triangle or a rectangle. Further, Shimura et al. does not disclose a first aperture having a first portion that is substantially hexagon shaped.

Still further, the Applicant provides that Yasaka et al. is directed to an electron beam aligner of a cell projection system including a condenser lens 3 for projecting an electron beam from an electron gun 1 on a first aperture mask P1 that has a single aperture, and a projection lens 5 for projecting the beam on a second aperture mask P2 to shape the electron beam. The shaped beam is then demagnified by a demagnification lens and projected by an objective 10 on the surface of a specimen. (Yasaka et al. Purpose, Constitution, and in Figure 1).

However, Yasaka et al. does not disclose the use of at least two multi-aperture arrays to shape the electron beam passing through them. Additionally, Yasaka et al. is not directed to the use of multiple apertures to create electron beams that have a cross-sectional shape of at least either a triangle or a rectangle. Further, Yasaka et al. does not disclose a first aperture having a first portion that is substantially hexagon shaped.

Accordingly, none of these references, Itoh et al., Shimura et al., or Yasaka et al., is directed to a system having two multi-aperture arrays to shape the electron beam passing through them. Additionally, Nakasuji does not provide incentive to modify its structure to include two multi-aperture arrays to shape the spaced apart beamlets. Nakasuji provides no incentive for using different shapes for the spaced apart beamlets. Nakasuji uses a simple shape, typically a 0.1μm by 0.1μm square, for the beamlets because each beamlet is designed to scan or trace the perimeter of one of the desired areas. Nakasuji is not designed to successively, stepwise, match adjacent desired areas arranged in a desired pattern as is the present invention. Therefore, the use of variable shaped beamlets will not make the inspection assembly of Nakasuji any more or less effective at tracing the perimeter of one of the desired areas.

Additionally, the Patent Office provides that Muraki et al. discloses the use of a first electron group 2 to direct electrons from the source 1 into a collimated beam in an axial direction AX toward the first multi-aperture array 3, the latter being here modified by Nakasuji's beam shaper 71 according to Muraki's teaching regarding the equivalence between crossover image and electron source. The Patent Office further provides that Muraki et al.'s modification of Nakasuji's device and method also make use of a second electron lens group 41 to direct each beamlet formed by the first multi-aperture array 3 toward the center of Itoh et al.'s or Shimura et al.'s or Yasaka et al.'s second aperture (as modified by Nakasuji into a multi-aperture array) placed at the crossover image between lens 43 and lens 44. The Patent Office further provides that Muraki et al. makes use of an electron deflector 6 disposed between the first multi-aperture array 3

and the second multi-aperture array placed at the crossover image between lens 43 and lens 44.

Still additionally, the Patent Office provides that Muraki et al.'s blanking aperture array BA may be alternately switched in position with the second multi-aperture array at the crossover image between lens 43 and lens 44, and thereby make further use of a third electron lens group 43 to direct each beamlet having selected shapes toward a corresponding aperture in the blanking aperture array. The Patent Office further provides that Nakasuji's device as modified by Kobinata's and Muraki et al.'s can then further make use of a fourth electron lens group 44 to focus the electron beamlets passing undeflected through the blanking aperture array onto the mask 5. The Patent Office provides that it would have been obvious to one of ordinary skill in the art at the time the invention was made to switch the first, second and the blanking aperture arrays in various sequential orders, since it has been held that a mere rearrangement of essential working parts without producing any novel or unexpected results involves only routine skill in the art. *In re Einstein*, 8 USPQ 167.

However, neither Muraki et al. nor Kobinata is directed to the use of various lenses and apertures in various sequential orders to create electron beams that have a cross-sectional shape of at least either a triangle or a rectangle. Additionally, Nakasuji provides no incentive for modifying its device to include the structure of Muraki et al. or Kobinata with the apertures in various sequential orders as a means for providing variable shaped beamlets. Nakasuji provides no incentive for using different shapes for the spaced apart beamlets. Nakasuji uses a simple shape, typically a 0.1μm by 0.1μm square, for the beamlets because each beamlet is designed to scan or trace the

perimeter of one of the desired areas. Nakasuji is not designed to successively, stepwise, match adjacent desired areas arranged in a desired pattern as is the present invention. Therefore, the use of variable shaped beamlets will not make the inspection assembly of Nakasuji any more or less effective at tracing the perimeter of one of the desired areas.

In contrast to the cited references, claim 49 of the present application requires "(a)n inspection system ... comprising: a source of electrons; a stage supporting the mask; a beamlet shaping section disposed between the source of electrons and the mask, the beamlet shaping section including a first multi-aperture array having apertures with a first shape and a second multi-aperture array having apertures with a second shape; a beamlet blanking section disposed between the beamlet shaping section and the mask; a first electron lens group directing electrons emitted from the source of electrons into a collimated beam in an axial direction towards the first multi-aperture array; a second electron lens group directing each beamlet in the array of electron beamlets formed by the first multi-aperture array towards the center of a corresponding aperture in the second multi-aperture array; an electron deflector disposed between the first multi-aperture array and the second multi-aperture array; and a detector assembly that measures electrons to inspect the mask."

These features are not taught or disclosed by the cited combination of references. Accordingly, claim 49 is believed to be patentable under 35 U.S.C. §103(a). Because claims 50-76 depend either directly or indirectly from claim 49, they are also considered to be patentable over the cited references.

Additionally, in contrast to the cited references, claim 124 of the present application requires "(a) method for inspecting a device with electrons ... comprising the steps of: generating electrons; directing the electrons in a collimated beam in an axial direction towards the device; directing the collimated beam of electrons through a beamlet shaping section comprising a first multi-aperture array having M rows and N columns of apertures having a first shape, a second multi-aperture array having M rows and N columns of apertures having a second shape; directing the electrons emerging from the beamlet shaping section through a beamlet blanking section; directing electron beamlets having the first shape formed by the first multi-aperture array towards the center of corresponding apertures in the second multi-aperture array; deflecting each of the electron beamlets formed by the first multi-aperture array away from the center of the corresponding aperture in the second multi-aperture array; and measuring electrons with a detector assembly to inspect the device."

These features are not taught or disclosed by the cited combination of references. Accordingly, claim 124 is believed to be patentable under 35 U.S.C. §103(a). Because claims 125-143 depend either directly or indirectly from claim 124, they are also considered to be patentable over the cited references.

New Claims

New claims 144-208 have been added by this amendment. These new claims are of slightly different scope that previously pending claims. However, these claims are considered to be patentable in view of the cited references.

In contrast to the cited references, new claim 144 of the present invention requires "(a)n inspection system for inspecting a mask ... comprising: a beamlet supply

assembly that directs a shaped beamlet toward one of the actual areas of the mask, the shaped beamlet having a cross-sectional size and shape that corresponds to a cross-sectional size and shape of one of the desired areas, wherein the beamlet supply assembly selectively and alternatively adjusts the shaped beamlet to have a cross-sectional shape of at least a triangle and a rectangle."

These features are not taught or suggested by the cited references. As a result, new claim 144 is believed to be patentable. Further, new claims 145-160 depend either directly or indirectly from new claim 144. Therefore, new claims 145-160 are also believed to be patentable.

Further, in contrast to the cited references, new claim 161 of the present invention requires "(a)n inspection system for inspecting a mask ... comprising: a beamlet supply assembly that directs a plurality of spaced apart beamlets toward the mask, the beamlet supply assembly including a first multi-aperture array having apertures with a first shape and a second multi-aperture array having apertures with a second shape that is different from the first shape, wherein a first section of the first shape is substantially hexagon shaped."

These features are not taught or suggested by the cited references. As a result, new claim 161 is believed to be patentable. Further, new claims 162-176 depend either directly or indirectly from new claim 161. Therefore, new claims 162-176 are also believed to be patentable.

Additionally, in contrast to the cited references, new claim 177 of the present invention requires "(a)n inspection system for inspecting a mask ... comprising: a beamlet supply assembly that directs a plurality of spaced apart, shaped beamlets

toward the mask, wherein the plurality of spaced apart, shaped beamlets are organized in a pattern that is substantially similar to at least a portion of one of the desired patterns; and at least one deflector to deflect the shaped beamlets to fill in the spaces between adjacent shaped beamlets to substantially complete one of the desired patterns."

These features are not taught or suggested by the cited references. As a result, new claim 177 is believed to be patentable. Further, new claims 178-192 depend either directly or indirectly from new claim 177. Therefore, new claims 178-192 are also believed to be patentable.

Still further, in contrast to the cited references, new claim 193 of the present invention requires "(a)n inspection system for inspecting a mask ... comprising: a beamlet supply assembly that directs a plurality of spaced apart beamlets toward the mask, the beamlet supply assembly including a first multi-aperture array and a second multi-aperture array; and a control section that adjusts the position of the first multi-aperture aperture array and the second multi-aperture array so that the shape of the beamlets can be easily changed between a first shape and a second shape that is different from the first shape."

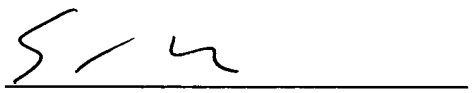
These features are not taught or suggested by the cited references. As a result, new claim 193 is believed to be patentable. Further, new claims 194-208 depend either directly or indirectly from new claim 193. Therefore, new claims 194-208 are also believed to be patentable.

CONCLUSION

In conclusion, the Applicant respectfully asserts that claims 49-76 and 124-208 are patentable for the reasons set forth above, and that the application is now in a condition for allowance. Accordingly, an early notice of allowance is respectfully requested. The Examiner is requested to call the undersigned at 858-456-1951 for any reason that would advance the instant application to issue.

Dated this the 24th day of April, 2003.

Respectfully submitted,



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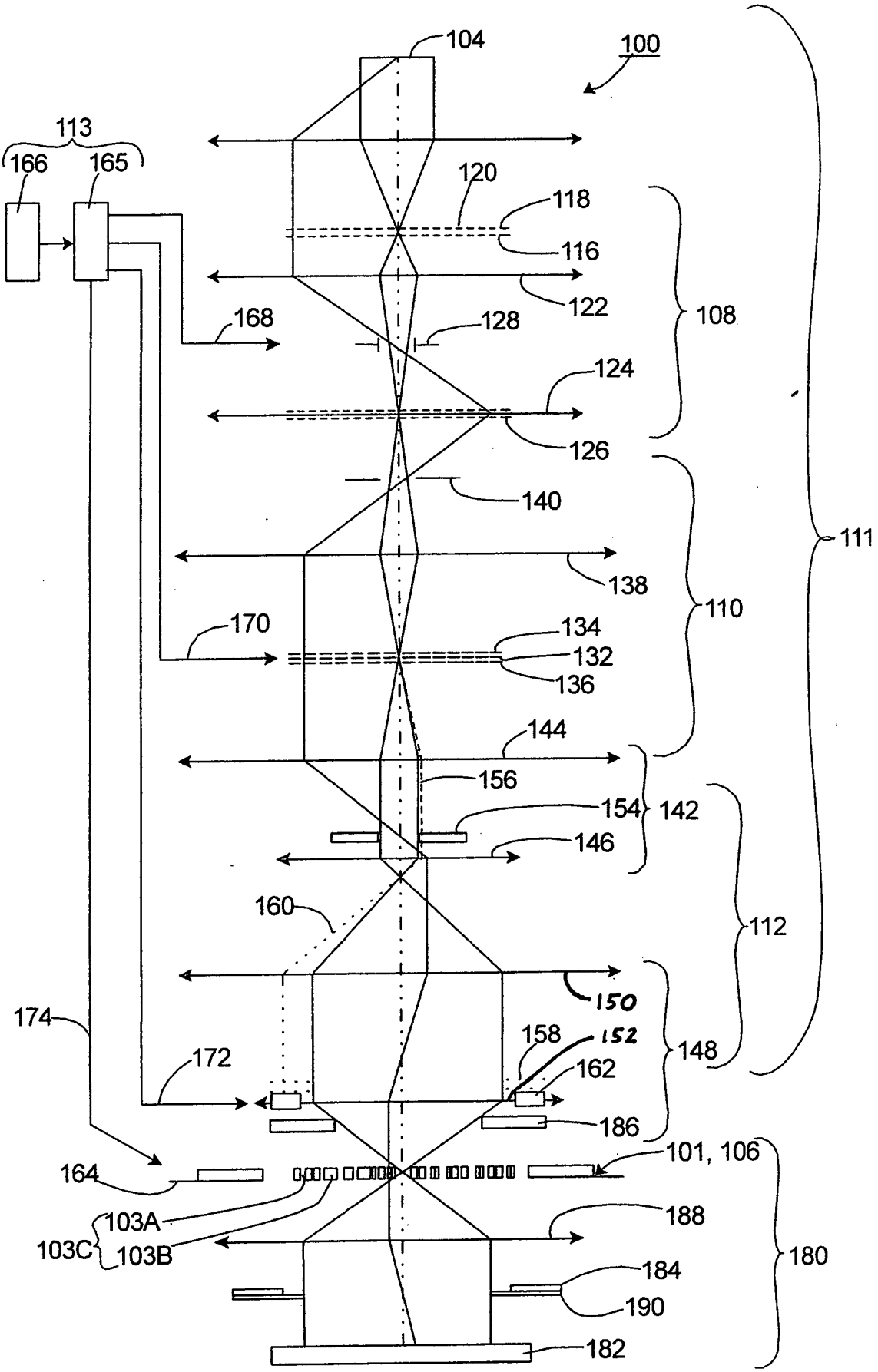

FIG. 1B

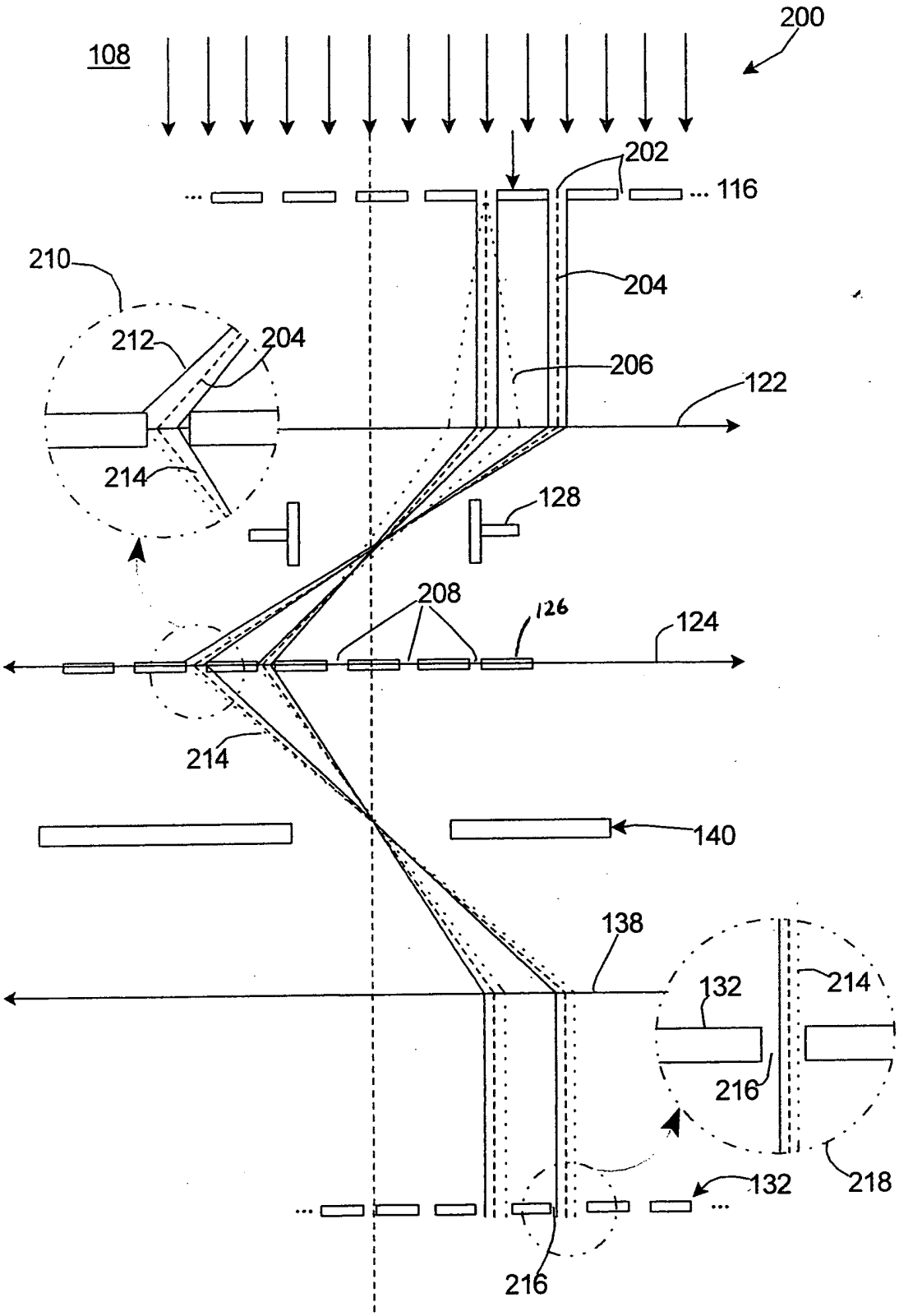

FIG. 2